

**Walbridge  
1501 Ardmore Blvd. Suite 301  
Pittsburgh, Pennsylvania**

**Initial Exposure Air Monitoring Assessment Report  
U.S. Steel Gary Works Strategic Coke  
Improvement Project – Phase 1  
Gary, Indiana**

**September 2010**





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September 24, 2010

TTL Project No. 6874.01

Mr. John Hucul  
Superintendent  
Walbridge  
1501 Ardmore Blvd., Suite 301  
Pittsburgh, Pennsylvania 15221

**Initial Exposure Air Monitoring Assessment Report**  
**U.S. Steel – Gary Works**  
**Strategic Coke Improvement Project – Phase 1**  
**Gary, Indiana**

Dear Mr. Hucul:

TTL Associates, Inc. (TTL) is pleased to submit this Initial Exposure Air Monitoring Assessment Report to Walbridge for air monitoring activities at the above-referenced site. Authorization to provide these services was granted on August 13, 2010.

TTL appreciates the continued opportunity to provide Walbridge with our engineering, consulting, and testing services. Should you have any questions or require additional information, please contact Mr. Timothy Belcher (734) 455-8600, extension 1248.

Sincerely,

**TTL Associates, Inc.**

*Krista Socie*

for

Henry A. Phillips, CIH  
Certified Industrial Hygienist

*Timothy Belcher*

Timothy Belcher  
Manager, Industrial Hygiene Services

cc: Mr. Mike Miskevics, Deputy General Manager, East

**INITIAL EXPOSURE AIR MONITORING ASSESSMENT REPORT  
U.S. STEEL - GARY WORKS  
STRATEGIC COKE IMPROVEMENT PROJECT – PHASE 1  
GARY, INDIANA**

**FOR**

**WALBRIDGE  
1501 ARDMORE BLVD., SUITE 301  
PITTSBURGH, PENNSYLVANIA**

**SUBMITTED**

**SEPTEMBER 24, 2010  
TTL PROJECT NO. 6874.01**

**TTL ASSOCIATES, INC.  
44265 PLYMOUTH OAKS BLVD.  
PLYMOUTH, MICHIGAN 48170  
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## **1.0 INTRODUCTION**

TTL Associates, Inc. (TTL) was retained by Walbridge to provide employee exposure air monitoring services in support of the excavation activities for the Strategic Coke Improvement Project at the U.S. Steel Gary Works facility in Gary, Indiana. The employee exposure air monitoring was performed during soil grading and excavation activities for the construction of a new coke facility at the U.S. Steel facility. TTL performed the air monitoring investigation from August 17 through August 20, 2010 and September 8 and 9, 2010.

### **1.1 Project Background**

Prior to the excavation activities at the site, background soil samples were collected at various locations and varying depths (surface and deeper up to 8 feet). Analytical data of the soil sampling provided by Walbridge indicated elevated levels of manganese and iron present in the existing soils. Due to the results of the soil sampling, there was a concern regarding potential exposure to dust containing manganese and iron for employees who would be conducting the excavation and construction related activities at the site of the new coke facility.

### **1.2 Project Objective**

The objective of this air monitoring project was to provide training and conduct employee exposure air monitoring for manganese and iron during excavations activities as well as ambient air monitoring upwind and downwind for total particulate during excavation activities. Results from the air monitoring would be compared to Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs). The PELs are as follows:

- The United States Occupational Safety and Health Administration (OSHA) Ceiling Exposure Limit (CEL) of 5 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) as a ceiling limit for Manganese. A ceiling limit basically states that at no time during the workday exposure, the airborne concentration cannot exceed this level. (29 CFR 1910.1000 Table Z-1).
- The United States Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of  $10 \text{ mg}/\text{m}^3$  as a time weighted average (TWA) for Iron. The TWA is based upon an entire workday exposure. (29 CFR 1910.1000 Table Z-1).
- The United States Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of  $15 \text{ mg}/\text{m}^3$  as a time weighted average (TWA) for Particulates Not Otherwise Specified (Total Particulate). The TWA is based upon an entire workday exposure. (29 CFR 1910.1000 Table Z-1).

### **1.3 Personnel**

TTL provided a certified industrial hygienist (CIH) to conduct the employee exposure and ambient air monitoring services in support of the excavation activities for this project. The air monitoring was conducted by Mr. Henry Phillips, CIH of TTL. Credentials for Mr. Phillips are presented in Appendix A.

## **2.0 INITIAL EXPOSURE ACTIVITIES**

This section describes the scope-of-work, air monitoring, engineering controls, equipment used, and personal protective equipment (PPE) utilized by the excavation contractor.

### **2.1 Training**

The training included recommended engineering controls (such as a water truck to wet down the areas of excavation as well as construction traffic) to help control dust levels and good hygienic practices to prevent hand-to-mouth transfer, all to reduce potential employee workday exposures to manganese, iron and total particulate to be implemented during excavation activities. Also each employee involved with excavation and grading activities received on-site training with regards to potential exposures, health effects with regards to overexposure to the aforementioned metals, and work practices to help minimize their workday exposures.

### **2.2 Surface Excavation Activities**

The scope-of-work for this project included the removal of surface soils in an area designated for contractor trailers. Surface soils were removed from this area and stockpiled followed by the placing of slag and stone over the future trailer area. The excavation work involved removing soils to a maximum of two feet below grade, followed by moving this soil to the trailer area for grading purposes. Once the soil was graded, slag and stone were trucked in to create a level base for the placement of contractor's trailers. During this phase there were exposures to ambient dust levels, and potential exposures to manganese and iron in the soils that were being moved, based upon original soil sampling results.

### **2.3 Trenching Excavation Activities**

The scope-of-work for this project also included the trenching of area soils for the installation of utility service lines. Soils were removed from this area and stockpiled. Trenching activities were conducted to a depth between six and eight feet below grade. During this phase there were exposures to ambient dust levels, and potential exposures to manganese and iron expected in the soils that were being removed based upon original soil sampling results.

### **2.4 Engineering Controls**

Engineering controls implemented by WPM Southern (excavation contractor) personnel during the excavation activities to control the dust levels in the immediate environment of the work area included the following:

- A water truck was used to wet the soils during excavation as well as the traffic lanes utilized by the excavation contractor's equipment.
- All employees utilized good hygienic practices of hand washing before breaks and lunch to prevent hand-to-mouth transfer of soils with potentially high manganese and iron.

- If total particulate levels became elevated, the water truck would increase the frequency of watering rounds throughout the site.

### **3.0 AIR MONITORING**

Personal exposure and area environmental samples were collected during the excavation activities. The personal exposure air samples were collected to monitor worker exposure levels in compliance with OSHA. The area ambient environmental samples were collected to evaluate total particulate concentrations upwind and downwind during excavation activities.

#### **3.1 Surface Excavation Personal Exposure Air Sampling and Results**

During the surface excavation activities both personal and ambient air samples were collected. The personal exposure samples were collected for the determination of manganese and iron airborne concentrations present in the air from excavation activities to which employees may be exposed to during the work day. All air sampling was conducted between August 17 through 20, 2010. Personal samples were collected on workers performing the following operations:

- Excavator Operator
- Bulldozer or Dump Truck Operator
- Front End Loader Operator
- Laborer

The laborer was chosen as the employee where short-term exposure samples would be collected, since this operation was considered to provide the highest potential exposure to generated dust levels.

Personal exposure samples were collected by placing the collection device (SKC PCXR8 Personal Sampling Pump) on the workers throughout the workday. Personal exposure samples were collected from the breathing zone of representative workers. All air sampling was conducted following National Institute of Occupational Safety (NIOSH) approved Method Number 7300 for metals. This method outlines the sampling media, the flow rate and the minimum and maximum sample volume to be collected.

All air sampling analysis was conducted by an American Industrial Hygiene Association (AIHA) accredited laboratory for the various analytes. Personal exposure air sampling results for manganese was determined to be below the analytical detection limit and iron results ranged from below detection level to  $0.3 \text{ mg/m}^3$ . These analytical levels are significantly below the CEL of  $5 \text{ mg/m}^3$  for manganese and PEL of  $10 \text{ mg/m}^3$  for iron. Tables of the personal exposure air monitoring results are included in Appendix B and official laboratory results are included in Appendix D.

#### **3.2 Surface Excavation Ambient Air Monitoring Results**

Ambient air monitoring for total particulate both upwind and downwind was performed during surface excavation activities. The dust monitor placed upwind failed and did not record any data for period between August 18 through 20, 2010. However the downwind ambient air monitor recorded ambient dust levels and data were logged periodically. The ambient total particulate air monitoring results are included in Appendix C. Based upon the recorded readings, the ambient



total particulate level did not exhibit concentrations of particulate above the PEL of 15 mg/m<sup>3</sup> for particulates not otherwise classified (Total Particulate).

Based on the results from the employee exposure air monitoring and the ambient air monitoring data, there is no expected overexposure to manganese, iron and total particulate for employees involved with the surface excavation activities. Therefore TTL recommended additional employee exposure and ambient air monitoring during excavation activities that involved removing soils to a depth between 6 to 8 feet.

### **3.3 Trenching Excavation Personal Exposure Air Sampling and Results**

During the trenching excavation activities both personal and ambient air samples were collected. The personal exposure samples were collected for the determination of manganese and iron airborne concentrations present in the air from excavation activities to which employees may be exposed to during the work day. Air sampling was conducted on September 8 and 9, 2010. Personal samples were collected on workers performing the following operations:

- Excavator Operator
- Bulldozer or Dump Truck Operator
- Front End Loader Operator
- Laborer

The laborer was chosen as the employee where short-term exposure samples would be collected, since this operation was considered to provide the highest potential exposure to generated dust levels.

Personal exposure samples were collected by placing the collection device (SKC PCXR8 Personal Sampling Pump) on the workers throughout the workday. Personal exposure samples were collected from the breathing zone of representative workers. All air sampling was conducted following National Institute of Occupational Safety (NIOSH) approved Method Number 7300 for metals. This method outlines the sampling media, the flow rate and the minimum and maximum sample volume to be collected.

All air sampling analysis was conducted by an American Industrial Hygiene Association (AIHA) accredited laboratory for the various analytes. Personal exposure air sampling results for manganese ranged from 0.0014 mg/m<sup>3</sup> to below the analytical detection and iron results ranged from below detection level to 0.18 mg/m<sup>3</sup>). These analytical levels are significantly below the CEL of 5 mg/m<sup>3</sup> ceiling for manganese and the PEL TWA of 10 mg/m<sup>3</sup> for iron. Tables of the personal exposure air monitoring results are included in Appendix B and official laboratory results are included in Appendix D.

### **3.4 Trenching Excavation Ambient Air Monitoring Results**

Ambient air monitoring for total particulate both upwind and downwind was performed during surface excavation activities. The upwind and downwind ambient air monitors for total particulate recorded ambient dust levels and data were logged periodically. The results are

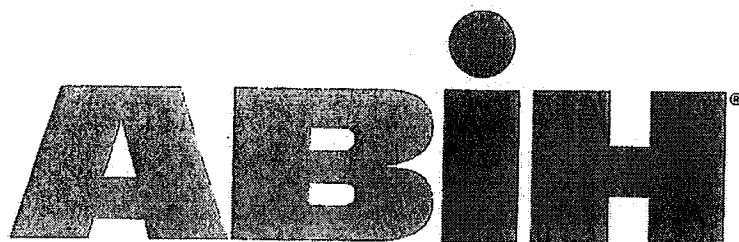
included in Appendix C. Based upon the recorded readings, the ambient total particulate level did not exhibit concentrations of particulate above the PEL of 15 mg/m<sup>3</sup> for particulates not otherwise classified (Total Particulate).

Based on the results from the employee exposure air monitoring and the ambient air monitoring data, there is no expected overexposure to manganese, iron and total particulate for employees involved with the surface excavation activities.

#### **4.0 CONCLUSIONS AND RECOMMENDATIONS**

Based upon the employee exposure air monitoring and the ambient air monitoring results, it is TTL's professional opinion that there is no potential overexposure to manganese, iron or total particulate for employees involved with excavation activities. This report will serve as a negative exposure assessment for the site during excavation activities. Subsequent construction activities similar to those monitored during this assessment, performed by similarly trained workers and following similar work practices, would not be expected to produce worker exposures above the CEL for Manganese or the PEL for Iron. However, this air monitoring investigation can only be considered a "snapshot in time" of conditions present during the time of each air monitoring investigation. Weather conditions, and work practices may impact employee exposures. If employee complaints of air quality or employee sick time rates increase, then additional air monitoring may be required.

**APPENDIX A**  
**TTL CERTIFICATIONS AND ACCREDITATIONS**



american board of industrial hygiene®

organized to improve the practice of industrial hygiene  
proclaims that

*Henry A. Phillips*

having met all requirements through  
education, experience and examination,  
is hereby certified in the

COMPREHENSIVE PRACTICE  
of  
INDUSTRIAL HYGIENE

and has the right to use the designations

CERTIFIED INDUSTRIAL HYGIENIST

**CIH**

Certificate Number: 9370 CP

Awarded: November 9, 2007

Expiration Date: June 1, 2013

*Barbara J. Dawson*  
Chair, ABIH

*Lynn C. O'Donnell*  
Executive Director ABIH

**APPENDIX B**

**PERSONAL EXPOSURE AIR MONITORING RESULTS DATA**

U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-01	Brian Flick - Front End Loader	9:51 AM	1:42 PM	2	462	Mn	<0.0022
						Fe	0.036
687401-02	Greg Grimmer - Backhoe	10:00 AM	1:50 PM	1.98	455	Mn	<0.0022
						Fe	0.023
687401-03	Gene Hammond - Laborer	10:00 AM	1:51 PM	1.96	453	Mn	<0.0022
						Fe	0.033
687401-04A	Craig Ewen - Bulldozer	10:00 AM	12:09 PM	2.1	271	Mn	<0.0037
						Fe	0.035
687401-04B	Craig Ewen - Bulldozer	12:09 PM	12:24 PM	2.1	31.5	Mn	<0.016
						Fe	<0.016
687401-04C	Craig Ewen - Bulldozer	12:24 PM	12:39 PM	2.1	31.5	Mn	<0.016
						Fe	<0.016
687401-05	Field Blank					Mn	<1 ug
						Fe	<1 ug

U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-06	Craig Ewen - Bulldozer	7:10 AM	2:10 PM	1.98	832	Mn	<0.0012
						Fe	0.0075
687401-07	Brian Flick - Front End Loader	7:10 AM	2:10 PM	1.95	819	Mn	<0.0012
						Fe	0.0049
687401-08	Greg Grimmer - Back Hoe	7:10 AM	2:10 PM	2.1	882	Mn	<0.0011
						Fe	0.025
687401-09A	Gene Hammond - Laborer	7:10 AM	1:10 PM	2	720	Mn	<0.0014
						Fe	<0.0014
687401-09B	Gene Hammond - Laborer	1:10 PM	1:25 PM	2	30	Mn	<0.033
						Fe	<0.033
687401-09C	Gene Hammond - Laborer	1:25 PM	1:40 PM	2	30	Mn	<0.033
						Fe	<0.033
687401-09D	Gene Hammond - Laborer	1:40 PM	1:55 PM	2	30	Mn	<0.033
						Fe	<0.033
687401-10	Field Blank					Mn	<1 ug
						Fe	<1ug



U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-11	Craig Ewen - Dump Truck	7:00 AM	2:00 PM	2.05	861	Mn	<0.0012
						Fe	0.017
687401-12	Brian Flick - Front End Loader	7:00 AM	2:00 PM	1.98	832	Mn	<0.0012
						Fe	0.035
687401-13	Greg Grimmer - Back Hoe	7:00 AM	2:00 PM	2	840	Mn	<0.0012
						Fe	0.019
687401-14A	Gene Hammond - Laborer	7:00 AM	1:15 PM	1.97	739	Mn	<0.0014
						Fe	0.023
687401-14B	Gene Hammond - Laborer	1:15 PM	1:30 PM	1.97	30	Mn	<0.033
						Fe	0.13
687401-14C	Gene Hammond - Laborer	1:30 PM	1:45 PM	1.97	30	Mn	<0.033
						Fe	0.21
687401-14D	Gene Hammond - Laborer	1:45 PM	2:00 PM	1.97	30	Mn	<0.033
						Fe	0.31
687401-15	Field Blank					Mn	<1 ug
						Fe	<1 ug

U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-16	Brian Flick - Front End Loader	7:00 AM	2:00 PM	2.2	924	Mn	<0.0012
						Fe	0.03
687401-17	Craig Ewen - Bulldozer	7:00 AM	2:00 PM	2.1	882	Mn	<0.0011
						Fe	0.0099
687401-18	Greg Grimmer - Back Hoe	7:00 AM	2:00 PM	1.98	832	Mn	<0.0012
						Fe	0.019
687401-19A	Gene Hammond - Laborer	7:00 AM	1:15 PM	1.99	746	Mn	<0.0013
						Fe	0.022
687401-19B	Gene Hammond - Laborer	1:15 PM	1:30 PM	1.99	30	Mn	<0.033
						Fe	<0.033
687401-19C	Gene Hammond - Laborer	1:30 PM	1:45 PM	1.99	30	Mn	<0.033
						Fe	<0.033
687401-19D	Gene Hammond - Laborer	1:45 PM	2:00 PM	1.99	30	Mn	<0.033
						Fe	0.037
687401-20	Field Blank					Mn	<0.001 mg
						Fe	<0.001 mg

U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-20	Craig Ewen - Bulldozer	7:10 AM	2:10 PM	2	840	Mn	<0.0012
					840	Fe	0.014
687401-21	Teresa Swiger - Front End Loader	7:10 AM	2:10 PM	1.98	832	Mn	<0.0012
					832	Fe	0.064
687401-22	Dave Simwick - Excavator	7:10 AM	2:10 PM	2.1	882	Mn	<0.0011
					882	Fe	0.063
687401-23A	Allen Lockhart - Laborer	7:10 AM	1:25 PM	1.96	735	Mn	<0.0014
					735	Fe	0.035
687401-23B	Allen Lockhart - Laborer	1:25 PM	1:40 PM	1.96	29	Mn	<0.034
					29	Fe	<0.034
687401-23C	Allen Lockhart - Laborer	1:40 PM	1:55 PM	1.96	29	Mn	<0.034
					29	Fe	<0.034
687401-23D	Allen Lockhart - Laborer	1:55 PM	2:10 PM	1.96	29	Mn	<0.034
					29	Fe	<0.034
687401-24	Field Blank					Mn	<0.001 mg
						Fe	<0.001 mg

U.S. Steel - Gary Works  
Strategic Coke Improvement Project - Phase 1  
New Coke Area  
Gary, Indiana

SAMPLE #	EMPLOYEE	ON	OFF	FLOW	VOL	PARAMETER	CONCENTRATION (mg/M3)
687401-25	Craig Ewen - Bulldozer	6:50 AM	1:50 PM	2.1	882	Mn	<0.0011
					882	Fe	0.0056
687401-26	Brian Flick - Grader	6:50 AM	1:50 PM	2.05	861	Mn	0.0014
					861	Fe	0.035
687401-27	Greg Grimmer - Excavator	6:50 AM	1:50 PM	1.99	836	Mn	<0.0012
					836	Fe	0.014
687401-28A	Allen Lockhart - Laborer	6:50 AM	1:05 PM	1.97	739	Mn	<0.0014
					739	Fe	0.0084
687401-28B	Allen Lockhart - Laborer	1:05 PM	1:20 PM	1.97	30	Mn	<0.033
					30	Fe	<0.033
687401-28C	Allen Lockhart - Laborer	1:20 PM	1:35 PM	1.97	30	Mn	<0.033
					30	Fe	0.18
687401-28D	Allen Lockhart - Laborer	1:35 PM	1:50 PM	1.97	30	Mn	<0.033
					30	Fe	0.048
687401-29	Field Blank					Mn	<0.001 mg
						Fe	<0.001 mg

## **APPENDIX C**

### **AMBIENT TOTAL PARTICULATE AIR MONITORING DATA**

Ambient Total Particulate Air Monitoring  
U.S. Steel – Gary Works  
Strategic Coke Improvement Project – Phase 1  
New Coke Area  
Gary, Indiana

DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
8/17/2010	8:30 AM	Downwind SE	0.0306	No Work
	8:35 AM	Upwind NW	0.0507	No Work - US Steel at stock piles
	9:23 AM	Downwind SE	0.0364	No Work - US Steel truck traffic
	9:28 AM	Upwind NW	0.0276	No Work
	10:33 AM	Downwind SE	0.0254	Work Staging - US Steel truck traffic
	10:37 AM	Upwind NW	0.0148	Work Staging - US Steel truck traffic
	11:40 AM	Downwind SE	0.067	Work Staging - US Steel truck traffic
	11:43 AM	Upwind NW	0.078	Work Staging - US Steel truck traffic
	12:52 PM	Downwind SE	0.0116	Work Staging - US Steel truck traffic
	1:03 PM	Upwind NW	0.0198	Work Staging - US Steel truck traffic
	1:50 PM	Downwind SE	0.0345	No visible work - water truck moving
	1:55 PM	Upwind NW	0.0301	No visible work - water truck moving

DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
8/18/2010	7:00 AM	Downwind NW	0.0337	Work Starting
	8:30 AM	Downwind NW	0.0404	Excavation grading work
	9:15 AM	Downwind NW	0.0187	Excavation grading work
	10:45 AM	Downwind NW	0.0222	Excavation grading work
	11:30 AM	Downwind NW	0.0387	Excavation grading work
	12:20 PM	Downwind NW	0.0387	Excavation grading work
	1:30 PM	Downwind NW	0.0242	Excavation grading work
	2:00 PM	Downwind NW	0.0486	Excavation grading work

NOTE: No upwind results; battery dead and charger not functioning.

Ambient Total Particulate Air Monitoring  
U.S. Steel – Gary Works  
Strategic Coke Improvement Project – Phase 1  
New Coke Area  
Gary, Indiana

DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
8/19/2010	6:55 AM	Downwind NW	0.0282	Work Starting
	8:00 AM	Downwind NW	0.0384	
	10:30 AM	Downwind NW	0.0287	Excavation grading work
	11:40 AM	Downwind NW	0.0206	Excavation grading work
	12:15 PM	Downwind NW	0.1618	Wind Shift - Excavation grading work
	12:45 PM	Downwind NW	0.0392	US Steel Truck Traffic
	1:35 PM	Downwind NW	0.0487	US Steel Truck Traffic
	2:20 PM	Downwind NW	0.0596	US Steel Truck Traffic
	3:10 PM	Downwind NW	0.0687	US Steel Truck Traffic

NOTE: No upwind results; battery dead and charger not functioning.

DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
8/20/2010	6:50 AM	Downwind NW	0.1226	US Steel Truck Traffic
	7:15 AM	Downwind NW	0.1813	Slag Trucks
	7:40 AM	Downwind NW	0.0894	Grading Slag
	9:00 AM	Downwind NW	0.0732	Grading Slag
	10:00 AM	Downwind NW	0.0476	Slag Truck Traffic
	11:50 AM	Downwind NW	0.0548	Slag Truck Traffic
	1:20 PM	Downwind NW	0.115	Slag Truck Traffic
	2:20 PM	Downwind NW	0.125	Slag Truck Traffic
	3:00 PM	Downwind NW	0.0905	Slag Truck Traffic

NOTE: No upwind results; motor not functioning.

Ambient Total Particulate Air Monitoring  
U.S. Steel – Gary Works  
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DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
9/8/2010	8:00 AM	Upwind NW	0.0448	Light wind
	8:10 AM	Downwind S	0.058	Light wind
	9:00 AM	Upwind NW	0.0875	Light wind - Trenching Work
	9:10 AM	Downwind S	0.125	Light wind - Trenching Work
	10:15 AM	Upwind NW	0.044	Light wind - Trenching Work
	10:25 AM	Downwind S	0.068	Light wind - Trenching Work
	11:30 AM	Upwind NW	0.034	Light wind - Trenching Work
	11:40 AM	Downwind S	0.048	Light wind - Trenching Work
	1:00 PM	Upwind NW	0.055	Light wind - Trenching Work
	1:10 PM	Downwind S	0.067	Light wind - Trenching Work
	2:00 PM	Upwind NW	0.085	Light wind - Trenching Work
	2:10 PM	Downwind S	0.134	Light wind - Trenching Work



Ambient Total Particulate Air Monitoring  
U.S. Steel – Gary Works  
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DATE	TIME	LOCATION	RESULTS (mg/M3)	NOTES
9/9/2010	7:20 AM	Upwind NW	0.038	Light wind
	7:30 AM	Downwind SE	0.058	Light wind
	8:00 AM	Upwind NW	0.068	Light wind - Trenching Work
	8:10 AM	Downwind SE	0.076	Light wind - Trenching Work
	9:15 AM	Upwind NW	0.044	Light wind - Trenching Work
	9:25 AM	Downwind SE	0.068	Light wind - Trenching Work
	10:20 AM	Upwind NW	0.028	Light wind - Trenching Work
	10:30 AM	Downwind SE	0.058	Light wind - Trenching Work
	11:00 AM	Upwind NW	0.089	Light wind - Trenching Work
	11:10 AM	Downwind SE	0.123	Light wind - Trenching Work
	1:20 PM	Upwind NW	0.095	Light wind - Trenching Work
	1:30 PM	Downwind SE	0.134	Light wind - Trenching Work
	2:00 PM	Upwind NW	0.126	Light wind - Trenching Work
	2:10 PM	Downwind SE	0.146	Light wind - Trenching Work

**APPENDIX D**  
**OFFICIAL LABORATORY RESULTS**



August 18, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10080998

Reference:

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 7 samples on 8/18/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:

## **CASE NARRATIVE**

**Date:** *18-Aug-10*

---

**Client:**           **TTL ASSOCIATES**

**Project:**

**Work Order No**   **10080998**

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

# ANALYTICAL RESULTS

Date: 18-Aug-10

Client: TTL ASSOCIATES

Project:

Work Order No: 10080998

Client ID: 687401-01 B.FLICK

Date Sampled: 8/17/2010

Lab ID: 001A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 452

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	16	0.036	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.0022	1	NIOSH 7300	08/18/2010 DH

Client ID: 687401-02 G. GRIMMER

Date Sampled: 8/17/2010

Lab ID: 002A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 455

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	10	0.023	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.0022	1	NIOSH 7300	08/18/2010 DH

Client ID: 687401-03 G. HAMMOND

Date Sampled: 8/17/2010

Lab ID: 003A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 453

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	15	0.033	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.0022	1	NIOSH 7300	08/18/2010 DH

Client ID: 687401-04A C. EWEN

Date Sampled: 8/17/2010

Lab ID: 004A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 271

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	9.4	0.035	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.0037	1	NIOSH 7300	08/18/2010 DH

# ANALYTICAL RESULTS

Date: 18-Aug-10

Client: TTL ASSOCIATES

Project:

Work Order No: 10080998

Client ID: 687401-04B C. EWEN

Date Sampled: 8/17/2010

Lab ID: 005A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 63

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	<1	<0.016	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.016	1	NIOSH 7300	08/18/2010 DH

Client ID: 687401-04C C. EWEN

Date Sampled: 8/17/2010

Lab ID: 006A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 63

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	<1	<0.016	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	<0.016	1	NIOSH 7300	08/18/2010 DH

Client ID: 687401-05 FIELD BLANK

Date Sampled: 8/17/2010

Lab ID: 007A

Date Received: 8/18/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration		Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
	(µg)	(mg/m³)			
Iron	<1	--	1	NIOSH 7300	08/18/2010 DH
Manganese	<1	--	1	NIOSH 7300	08/18/2010 DH

## General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.



**Bureau Veritas North America, Inc.**

**Chicago Lab**  
95 Oakwood Road  
Lake Zurich, IL 60047  
(888) 576-7522  
(847) 726-3320  
FAX (847) 726-3323

**RUSH ANALYSIS**

**CONTACT LAB IN ADVANCE**

Need Results by: 8 / 18 / 10 4PM

Charges Authorized? ☒ Yes ☐ No

(If Yes, Initial here) HP

Email ☐ Results ☐ PHONE VERBAL

Fax ☐

[illegible]



August 19, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10081076

Reference: 6874.01

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 8 samples on 8/19/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:



## CASE NARRATIVE

Date: 19-Aug-10

---

**Client:** TTL ASSOCIATES

**Project:** 6874.01

**Work Order No** 10081076

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

# ANALYTICAL RESULTS

Date: 19-Aug-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10081076

Client ID: 687401-06 C.EWEN

Date Sampled: 8/18/2010

Lab ID: 001A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 832

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	6.2	0.0075	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-07 B.FLICK

Date Sampled: 8/18/2010

Lab ID: 002A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 819

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	4.0	0.0049	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-08 G.GRIMMER

Date Sampled: 8/18/2010

Lab ID: 003A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 882

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	22	0.025	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.0011	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-09A G.HAMMOND

Date Sampled: 8/18/2010

Lab ID: 004A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 720

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.0014	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.0014	1	NIOSH 7300	08/19/2010 DH

# ANALYTICAL RESULTS

Date: 19-Aug-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10081076

Client ID: 687401-09B G.HAMMOND

Date Sampled: 8/18/2010

Lab ID: 005A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-09C G.HAMMOND

Date Sampled: 8/18/2010

Lab ID: 006A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-09D G.HAMMOND

Date Sampled: 8/18/2010

Lab ID: 007A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/19/2010 DH

Client ID: 687401-10 FIELD BLANK

Date Sampled: 8/18/2010

Lab ID: 008A

Date Received: 8/19/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	--	1	NIOSH 7300	08/19/2010 DH
Manganese	<1	--	1	NIOSH 7300	08/19/2010 DH

## ANALYTICAL RESULTS

Date: 19-Aug-10

---

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10081076

---

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.







August 20, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10081172

Reference: B874.01

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 8 samples on 8/20/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:

## **CASE NARRATIVE**

**Date: 20-Aug-10**

---

**Client:** TTL ASSOCIATES

**Project:** B874.01

**Work Order No** 10081172

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

# ANALYTICAL RESULTS

Date: 20-Aug-10

Client: TTL ASSOCIATES

Project: B874.01

Work Order No: 10081172

Client ID: 687401-11 C. EWEN

Date Sampled: 8/19/2010

Lab ID: 001A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 861

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	15	0.017	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401-12 B. FLICK

Date Sampled: 8/19/2010

Lab ID: 002A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 832

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	2.9	0.0035	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401-13 G. GRIMMER

Date Sampled: 8/19/2010

Lab ID: 003A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 840

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	16	0.019	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401-14A G. HAMMOND

Date Sampled: 8/19/2010

Lab ID: 004A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 739

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	17	0.023	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.0014	1	NIOSH 7300	08/20/2010 DH



# ANALYTICAL RESULTS

Date: 20-Aug-10

Client: TTL ASSOCIATES

Project: B874.01

Work Order No: 10081172

Client ID: 687401-14B G. HAMMOND

Date Sampled: 8/19/2010

Lab ID: 005A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	3.8	0.13	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401-14C G. HAMMOND

Date Sampled: 8/19/2010

Lab ID: 006A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	6.2	0.21	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401-14D G. HAMMOND

Date Sampled: 8/19/2010

Lab ID: 007A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	9.4	0.31	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/20/2010 DH

Client ID: 687401- BLANK

Date Sampled: 8/19/2010

Lab ID: 008A

Date Received: 8/20/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	--	1	NIOSH 7300	08/20/2010 DH
Manganese	<1	--	1	NIOSH 7300	08/20/2010 DH

# ANALYTICAL RESULTS

Date: 20-Aug-10

Client: TTL ASSOCIATES

Project: B874.01

Work Order No: 10081172

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

# REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Bureau Veritas Use Only  
Bureau Veritas Lab Project No.

10081172



## Bureau Veritas North America, Inc.

**Detroit Lab**  
22345 Roethel Drive  
Novi, MI 48375  
(800) 806-5887  
(248) 344-1770  
FAX (248) 344-2655

**Atlanta Lab**  
3380 Chastain Meadows Pkwy., Suite 300  
Kennesaw, GA 30144  
(800) 252-9919  
(770) 499-7500  
FAX (770) 499-7511

**Chicago Lab**  
95 Oakwood Road  
Lake Zurich, IL 60047  
(888) 576-7522  
(847) 726-3320  
FAX (847) 726-3323

### RUSH ANALYSIS

CONTACT LAB IN ADVANCE

Need Results by: 8 / 20 / 10 5p  
Charges Authorized? ☒ Yes ☐ No  
(If yes, Initial here) NP  
Email 734 634-0604  
☐ Results ☐ Fax

Name <u>Henry Phillips</u>		Client Job No. <u>6874.01</u>		PO # <input type="checkbox"/>		<input type="checkbox"/> Call for Credit Card Information <input type="checkbox"/> Direct Bill	
Company <u>TYL ASSOCIATES</u>		Dept.		Name			
Mailing Address <u>44365 RYMOUTH OAKS BLVD</u>				Company			
City, State, Zip <u>PLYMOUTH MI 48170</u>				Address			
Telephone No. <u>734 634-0604</u>		FAX No.		City, State, Zip			
Special instructions and/or specific regulatory requirements: (method, limit of detection, etc.) <u>VERBAL RESULTS BY SP</u> <u>8/20/10</u>				ANALYSIS REQUESTED (Enter an 'X' in the box below to indicate request. Enter a 'P' if Preservative added.)*			
* Explanation of Preservative							
CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/MEDIA	AIR VOLUME (specify units)	Number of Containers	FOR LAB USE ONLY	
<u>687401-11 C. EWEN</u>	<u>8/19/10</u>	<u>3:00P</u>	<u>MCE</u>	<u>851L</u>	<u>X</u>	<u>X</u>	
<u>687401-12 B. FLICK</u>				<u>832L</u>	<u>X</u>	<u>X</u>	
<u>687401-13 G. GRAMMER</u>				<u>840L</u>	<u>X</u>	<u>X</u>	
<u>687401-14A G. HAMMOND</u>				<u>739L</u>	<u>X</u>	<u>X</u>	
<u>687401-14B "</u>				<u>30L</u>	<u>X</u>	<u>X</u>	
<u>687401-14C "</u>				<u>30L</u>	<u>X</u>	<u>X</u>	
<u>687401-14D "</u>				<u>30L</u>	<u>X</u>	<u>X</u>	
<u>687401- BLANK</u>				<u>-</u>	<u>X</u>	<u>X</u>	
Collected by: <u>Henry Phillips</u>				(print)			
Relinquished by:				Date/Time			
Relinquished by:				Date/Time			
Method of Shipment:				Date/Time			
Sample Condition Upon Receipt: <input type="checkbox"/> Acceptable <input type="checkbox"/> Other (explain)				Date/Time			
Authorized by: <u>Henry Phillips</u>				Date <u>8/19/10</u>			



August 23, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10081282

Reference: 6874.1

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 8 samples on 8/21/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:

## CASE NARRATIVE

Date: 23-Aug-10

---

Client: TTL ASSOCIATES

Project: 6874.1

Work Order No 10081282

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.



## ANALYTICAL RESULTS

Date: 23-Aug-10

Client: TTL ASSOCIATES

Project: 6874.1

Work Order No: 10081282

Client ID: 687401-16 B. FLICK

Date Sampled: 8/20/2010

Lab ID: 001A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 824

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	25	0.030	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/23/2010 DH

Client ID: 687401-17 C. EWEN

Date Sampled: 8/20/2010

Lab ID: 002A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 882

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	8.7	0.0099	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.0011	1	NIOSH 7300	08/23/2010 DH

Client ID: 687401-18 G. GRIMMER

Date Sampled: 8/20/2010

Lab ID: 003A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 832

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	16	0.019	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	08/23/2010 DH

Client ID: 687401-19A G. HAMMOND

Date Sampled: 8/20/2010

Lab ID: 004A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 746

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	17	0.022	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.0013	1	NIOSH 7300	08/23/2010 DH

# ANALYTICAL RESULTS

Date: 23-Aug-10

Client: TTL ASSOCIATES

Project: 6874.1

Work Order No: 10081282

Client ID: 687401-19B G. HAMMOND

Date Sampled: 8/20/2010

Lab ID: 005A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/23/2010 DH

Client ID: 687401-19C G. HAMMOND

Date Sampled: 8/20/2010

Lab ID: 006A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/23/2010 DH

Client ID: 687401-19D G. HAMMOND

Date Sampled: 8/20/2010

Lab ID: 007A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	1.1	0.037	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	08/23/2010 DH

Client ID: BLANK

Date Sampled: 8/20/2010

Lab ID: 008A

Date Received: 8/21/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	--	1	NIOSH 7300	08/23/2010 DH
Manganese	<1	--	1	NIOSH 7300	08/23/2010 DH

# ANALYTICAL RESULTS

Date: 23-Aug-10

Client: TTL ASSOCIATES

Project: 6874.1

Work Order No: 10081282

## General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.



# REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Bureau Veritas Use Only  
Bureau Veritas Lab Project No.

10081282



**Detroit Lab**  
22345 Roethel Drive  
Novi, MI 48375  
(800) 806-5887  
(248) 344-1770  
FAX (248) 344-2655

**Chicago Lab**  
95 Oakwood Road  
Lake Zurich, IL 60047  
(888) 576-7522  
(847) 726-3320  
FAX (847) 726-3323

## Bureau Veritas North America, Inc.

### RUSH ANALYSIS

CONTACT LAB IN ADVANCE

Need Results by: 8/21/10

Charges Authorized? ☒ Yes ☐ No

(If yes, Initial here) HP

Email Results 734 634-0604

☐ Fax

☐ Call for Credit Card Information ☐ Direct Bill

Name Henry Phillips

Company TTL ASSOCIATES

Mailing Address 44265 Plymouth Oaks Blvd.

City, State, Zip Plymouth, MI 48170

Telephone No. 734 634-0604 FAX No.

Client Job No. 6874-01 Dept.

Special instructions and/or specific regulatory requirements:

(method, limit of detection, etc.)

CALL 734 634-0604 WITH

VERBAL RESULTS

\* Explanation of Preservative

CLIENT SAMPLE IDENTIFICATION

DATE SAMPLED

TIME SAMPLED

MATRIX/MEDIA

AIR VOLUME (specify units)

Waters:

☐ Drinking Water

☐ Groundwater

☐ Wastewater

Soils:

Which state are these from?

Number of Containers

ANALYSIS REQUESTED

(Enter an 'X' in the box below to indicate request. Enter a 'P' if Preservative added.)

FOR LAB USE ONLY

Collector's Signature: Henry Phillips

Received by:

Received by:

Received at Lab by:

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

Chain of Custody

Collected by: Henry Phillips

Relinquished by: Henry Phillips

Relinquished by:

Method of Shipment:

Authorized by: Henry Phillips Date 8/20/10

(Client Signature MUST Accompany Request)

Page 1 of 1



September 09, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10090386

Reference: 6874.01

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 8 samples on 9/9/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:

## CASE NARRATIVE

Date: 09-Sep-10

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Client: TTL ASSOCIATES

Project: 6874.01

Work Order No 10090386

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

## ANALYTICAL RESULTS

Date: 09-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090386

Client ID: 687401-20 C. EWEN

Date Sampled: 9/8/2010

Lab ID: 001A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 840

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	12	0.014	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-21 T. SWIGER

Date Sampled: 9/8/2010

Lab ID: 002A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 832

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	5.3	0.0064	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-22 D. SIMWICK

Date Sampled: 9/8/2010

Lab ID: 003A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 882

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	5.5	0.0063	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.0011	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-23A A. LOCKHART

Date Sampled: 9/8/2010

Lab ID: 004A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 735

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	25	0.035	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.0014	1	NIOSH 7300	09/09/2010 DH

## ANALYTICAL RESULTS

Date: 09-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090386

Client ID: 687401-23B A. LOCKHART

Date Sampled: 9/8/2010

Lab ID: 005A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 29

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.034	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.034	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-23C A. LOCKHART

Date Sampled: 9/8/2010

Lab ID: 006A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 29

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.034	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.034	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-23D A. LOCKHART

Date Sampled: 9/8/2010

Lab ID: 007A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 29

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.034	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	<0.034	1	NIOSH 7300	09/09/2010 DH

Client ID: 687401-24 BLANK

Date Sampled: 9/8/2010

Lab ID: 008A

Date Received: 9/9/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	--	1	NIOSH 7300	09/09/2010 DH
Manganese	<1	--	1	NIOSH 7300	09/09/2010 DH

## ANALYTICAL RESULTS

Date: 09-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090386

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

# REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Bureau Veritas Use Only  
Bureau Veritas Lab Project No.

10090386



**BUREAU VERITAS**

## Bureau Veritas North America, Inc.

**Detroit Lab**  
22345 Roethel Drive  
Novi, MI 48375  
(800) 806-5887  
(248) 344-1770  
FAX (248) 344-2655

**Atlanta Lab**  
3380 Chastain Meadows Pkwy., Suite 300  
Kennesaw, GA 30144  
(800) 252-9919  
(770) 499-7500  
FAX (770) 499-7511

**Chicago Lab**  
95 Oakwood Road  
Lake Zurich, IL 60047  
(888) 576-7522  
(847) 726-3320  
FAX (847) 726-3323

### RUSH ANALYSIS

CONTACT LAB IN ADVANCE  
Need Results by: **9 / 9 / 10 PM**

Charges Authorized? ☒ Yes ☐ No  
(If yes, Initial here) **HP**

Email Results: **734 634-0604 VERBAS**

☐ Fax

Name **HENRY PHILLIPS** Client Job No. **6874.01**

Company **TTL ASSOCIATES** Dept.

Mailing Address **4426 S. PLYMOUTH OAKS BLVD.**

City, State, Zip **PLYMOUTH MI 48176**

Telephone No. **734 634-0604** FAX No.

Special instructions and/or specific regulatory requirements:  
(method, limit of detection, etc.)

**VERBAL RESULTS BY 9/19/10 PM**

**TO 734 634-0604**

\* Explanation of Preservative

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/MEDIA	AIR VOLUME (specify units)	Number of Containers	ANALYSIS REQUESTED (Enter an 'X' in the box below to indicate request. Enter a 'P' if Preservative added.)	FOR LAB USE ONLY
687401-20 C. EWEN ✓	9/8/10		MSE	840L	X	X	
687401-21 T. SWIGER ✓				832L			
687401-22 B. SIMWICK ✓				882L			
687401-23A A. LOCKHART ✓				735L			
687401-23B ✓				29L			
687401-24C ✓				29L			
687401-23A ✓				29L			
687401-24 BLANK ✓				-			

CHAIN OF CUSTODY

Collected by: **HENRY PHILLIPS** (print)

Relinquished by: **Henry Phillips**

Relinquished by: **Henry Phillips**

Method of Shipment:

Authorized by: **Henry Phillips** Date **9/19/10**

Collector's Signature: **Henry Phillips**

Received by: **Henry Phillips** Date/Time **9/19/10**

Received by: **Henry Phillips** Date/Time **9/19/10**

Received at Lab by: **Henry Phillips** Date/Time **9/19/10 9:43**

Sample Condition Upon Receipt: ☒ Acceptable ☐ Other (explain)





September 10, 2010

Henry Phillips  
TTL ASSOCIATES  
44265 Plymouth Oaks Blvd  
Plymouth, MI 48170-

Bureau Veritas Work Order No. 10090444

Reference: 6874.01

Dear Henry Phillips:

Bureau Veritas North America, Inc. received 8 samples on 9/10/2010 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Laura McMahon-Parker  
Manager, Client Services

cc:



## CASE NARRATIVE

Date: 10-Sep-10

---

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No 10090444

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

# ANALYTICAL RESULTS

Date: 10-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090444

Client ID: 687401-25 C. EWEN

Date Sampled: 9/9/2010

Lab ID: 001A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 882

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	5.0	0.0056	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.0011	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-26 B. FLICK

Date Sampled: 9/9/2010

Lab ID: 002A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 861

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	30	0.035	1	NIOSH 7300	09/10/2010 DH
Manganese	1.2	0.0014	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-27 G. GRIMMER

Date Sampled: 9/9/2010

Lab ID: 003A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 836

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	11	0.014	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.0012	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-28A A. LOCKHART

Date Sampled: 9/9/2010

Lab ID: 004A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 739

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	6.2	0.0084	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.0014	1	NIOSH 7300	09/10/2010 DH

# ANALYTICAL RESULTS

Date: 10-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090444

Client ID: 687401-28B A. LOCKHART

Date Sampled: 9/9/2010

Lab ID: 005A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	<0.033	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-28C A. LOCKHART

Date Sampled: 9/9/2010

Lab ID: 006A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	5.3	0.18	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-28D A. LOCKHART

Date Sampled: 9/9/2010

Lab ID: 007A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): 30

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	1.4	0.048	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	<0.033	1	NIOSH 7300	09/10/2010 DH

Client ID: 687401-29 BLANK

Date Sampled: 9/9/2010

Lab ID: 008A

Date Received: 9/10/2010

Matrix: MCE Filter, .8um

Air Vol.(L): NA

Analyte	Concentration (µg)	Concentration (mg/m³)	Reporting Limit (µg)	Test Method	Date Analyzed / Analyst
Iron	<1	--	1	NIOSH 7300	09/10/2010 DH
Manganese	<1	--	1	NIOSH 7300	09/10/2010 DH

# ANALYTICAL RESULTS

Date: 10-Sep-10

Client: TTL ASSOCIATES

Project: 6874.01

Work Order No: 10090444

## General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.



# REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Bureau Veritas Use Only  
Bureau Veritas Lab Project No.

10090444



**BUREAU VERITAS**

## Bureau Veritas North America, Inc.

**Detroit Lab**  
22345 Roethel Drive  
Novi, MI 48375  
(800) 806-5887  
(248) 344-1770  
FAX (248) 344-2655

**Atlanta Lab**  
3380 Chastain Meadows Pkwy., Suite 300  
Kennesaw, GA 30144  
(800) 252-9919  
(770) 499-7500  
FAX (770) 499-7511

**Chicago Lab**  
95 Oakwood Road  
Lake Zurich, IL 60047  
(888) 576-7522  
(847) 726-3320  
FAX (847) 726-3323

### RUSH ANALYSIS

CONTACT LAB IN ADVANCE

Need Results by: 9 / 10 / 16 PM

Charges Authorized? ☒ Yes ☐ No

(if yes, initial here) HP

Email VERBAL-734634-0604

☐ Results ☐ Fax

Name	Henry Phillips	Client Job No.	6874.01
Company	ITL Associates	Dept.	
Mailing Address	44265 Plymouth Oaks Blvd		
City, State, Zip	Plymouth, MI 48170		
Telephone No.	734634-0604	FAX No.	

**Special instructions and/or specific regulatory requirements:**  
(method, limit of detection, etc.)  
VERBAL RESULTS TO  
734634-0604

\* Explanation of Preservative

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/MEDIA	AIR VOLUME (specify units)
687401-25 C. EWEN	9/9/10		MCB	882L
687401-26 B. FLICK				861L
687401-27 G. GRIMMER				836L
687401-28 A. LOCKHART				739L
" -28B "				30L
AL -28C "				30L
AL -28D "				30L
687401-29 BLANK				-

<b>CHAIN OF CUSTODY</b>	Collected by:	Henry Phillips	Collector's Signature:	Henry Phillips
	Relinquished by:	Henry Phillips	Received by:	
	Relinquished by:		Received by:	
	Method of Shipment:		Received at Lab by:	MM Samples
	Authorized by:	Henry Phillips	Sample Condition Upon Receipt:	<input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Other (explain)